

ENCAPSULATION OF A DEVICE

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Field of the Invention

The present invention relates to the fabrication of
5 devices. More particularly, the invention relates to
device encapsulation.

Background of the Invention

In device fabrication, one or more device layers
10 are formed on a substrate. The layers are sequentially
deposited and patterned to create features on the
surface of the substrate. The layers can be patterned
individually and/or as a combination of layers to form
the desired features. The features serve as components
15 that perform the desired functions, creating the device.

One type of device which is of particular interest
is a light emitting diode (LED). LEDs can have a
variety of applications. For example, a plurality of
LED cells or pixels can be formed on a substrate to
20 create a pixelated LED device for use as a display, such
as a flat panel display (FPD).

Typically, an LED pixel comprises one or more
functional layers sandwiched between two electrodes to
form a functional stack. Charge carriers are injected

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particularly those formed on thin or flexible substrates.

Summary of the Invention

5 The invention relates to encapsulating devices. The device includes active and non-active regions. Active components are provided in the active regions, separated by non-active regions. In one embodiment, a cap support on which a cap is mounted is provided. The
10 cap support surrounds the periphery of the device and in at least one of the non-active regions. The cap support in the non-active regions are particularly useful for flexible devices since they provide support for the cap to prevent it from contacting the active components due
15 to stress induced by bending.

Brief Description of the Drawings

Fig. 1 shows an embodiment of the invention;

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Figs. 2a-~~c~~ show a process for fabricating an
20 electronic device in accordance with one embodiment of the invention;

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Figs. 3a-~~b~~ show a process for fabricating an electronic device in accordance with another embodiment of the invention; and

Figs. 4a-⁴_b show a process for fabricating an electronic device in accordance with one embodiment of the invention.

5 Preferred Embodiments of the Invention

The invention relates generally to the fabrication of devices. In particular, the invention provides a cost effective package for encapsulating devices, particularly those formed on flexible or thin
10 substrates.

Fig. 1 shows a device 100 in accordance with one embodiment of the invention. The device can be, for example, an electrical, a mechanical, an electromechanical device, or a microelectromechanical
15 system (MEMS). The device comprises one or more active components 110 formed on a substrate 101. In one embodiment, the active components are formed on active regions 115 of the substrate. Non-active regions 120 are provided on the substrate. As shown, the non-active
20 regions separates the active components.

A cap support 130 is provided on the periphery of the device surrounding the active components. A cap 180 rests on the cap support. The cap hermetically seals the active components from the environment. The cap